

IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strike through~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

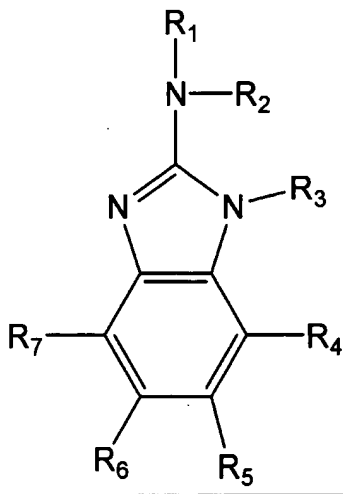
Please CANCEL claims 2 and 4 without prejudice or disclaimer and AMEND claims claims 1, 6, 10, 15, 19, 20, 22, 23, 27, 28 and 30 in accordance with the following:

1. (Currently amended) An antibacterial colorant, comprising a colorant molecule having at least one functional group and at least one antibacterial moiety bound thereto by one of: an ester bond and an amide bond,

wherein the antibacterial agent is one of:

a carbendazim derivative represented by the following Chemical Formula 1:

Chemical Formula 1

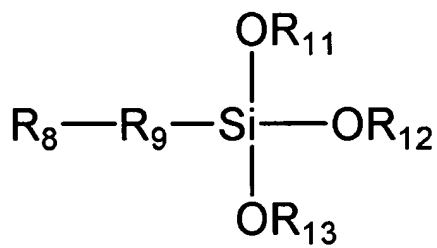


wherein R₁ is selected from the group consisting of a hydrogen atom, a hydroxy group, an amino group, a carboxyl group or salts thereof, a sulfonic acid group or salts thereof or a phosphoric acid group or salts thereof, and R₂, R₃, R₄, R₅, R₆ and R₇ each independently is selected from the group consisting of a hydrogen atom, a halogen atom, a hydroxy group, a nitro group, a cyano group, an amino group, an amidino group, a hydrazine group, a hydrazone group, a carboxyl group or salts thereof, a phosphoric acid group or salts thereof, a substituted or an unsubstituted alkyl group with 1 to 30 carbon atoms, a substituted or an unsubstituted alkylthio group with 1 to 30 carbon atoms, a substituted or an unsubstituted aryl group with 6 to 30 carbon atoms, a substituted or an unsubstituted arylalkyl group with 6 to 30 carbon atoms, a

substituted or an unsubstituted heteroalkyl group with 1 to 30 carbon atoms, a substituted or an unsubstituted heteroaryl group with 6 to 30 carbon atoms, and a substituted or an unsubstituted heteroarylalkyl group with 6 to 30 carbon atoms;

a silane derivative represented by the following Chemical Formula 2:

Chemical Formula 2



wherein R₈ is selected from the group consisting of a hydrogen atom, a hydroxy group, an amino group, a carboxyl group or salts thereof, and a sulfonic acid group or salts thereof, R₉ is selected from the group consisting of a heteroatom of -O-, -N-, -S-, or -P-, a substituted or an unsubstituted alkylene group with 1 to 30 carbon atoms, a substituted or an unsubstituted alkenylene or substituted or unsubstituted alkynylene groups with 2 to 30 carbon atoms, a substituted or an unsubstituted heteroalkylene group with 1 to 30 carbon atoms, a substituted or an unsubstituted arylene group with 6 to 30 carbon atoms, a substituted or an unsubstituted arylalkylene group with 6 to 30 carbon atoms, a substituted or an unsubstituted heteroarylene group with 6 to 30 carbon atoms, a substituted or an unsubstituted heteroarylalkylene group with 6 to 30 carbon atoms, and R₁₁, R₁₂, and R₁₃ each independently is selected from the group consisting of a hydrogen atom, a substituted or an unsubstituted alkyl group with 1 to 30 carbon atoms, a substituted or an unsubstituted alkenyl or a substituted or an unsubstituted alkynyl group with 2 to 30 carbon atoms, a substituted or an unsubstituted heteroalkyl group with 1 to 30 carbon atoms, a substituted or an unsubstituted aryl group with 6 to 30 carbon atoms, a substituted or an unsubstituted arylalkyl group with 6 to 30 carbon atoms, a substituted or an unsubstituted heteroaryl group with 6 to 30 carbon atoms, and a substituted or an unsubstituted heteroarylalkyl group with 6 to 30 carbon atoms; and

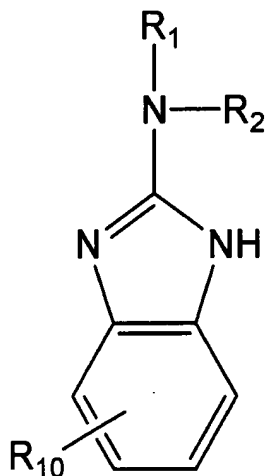
a combination thereof.

2. (Cancelled)

3. (Original) The antibacterial colorant of claim 1, wherein the antibacterial agent is

a carbendazim derivative of Chemical Formula 1 represented by the following Chemical Formula 3:

Chemical Formula 3



wherein R₁ is selected from the group consisting of a hydrogen atom, a hydroxy group and a carboxyl group, and R₂ and R₁₀ each independently is selected from the group consisting of a hydrogen atom, a halogen atom, a hydroxy group, a nitro group, a cyano group, an amino group, an amidino group, a hydrazine group, a hydrazone group, a carboxyl group or salts thereof, a sulfonic acid group or salts thereof, a phosphoric acid group or salts thereof, a substituted or an unsubstituted alkyl group with 1 to 30 carbon atoms, a substituted or an unsubstituted alkenyl or a substituted or an unsubstituted alkynyl group with 2 to 30 carbon atoms, a substituted or an unsubstituted heteroalkyl group with 1 to 30 carbon atoms, a substituted or an unsubstituted aryl group with 6 to 30 carbon atoms, a substituted or an unsubstituted arylalkyl group with 6 to 30 carbon atoms, a substituted or an unsubstituted heteroaryl group with 6 to 30 carbon atoms, and a substituted or an unsubstituted heteroarylalkyl group with 6 to 30 carbon atoms.

4. (Cancelled)

5. (Original) The antibacterial colorant of claim 1, wherein the colorant molecule is one of: a dye and a pigment.

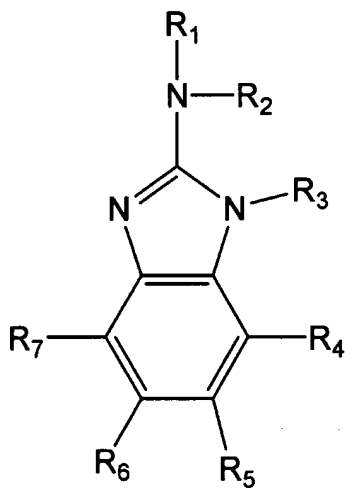
6. (Currently amended) An ink composition comprising:
a carrier medium; and

an antibacterial colorant, comprising a colorant molecule having at least one functional group and at least one antibacterial moiety bound thereto by one of: an ester bond and an amide bond,

wherein the antibacterial agent is one of:

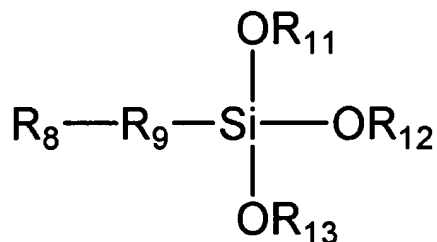
a carbendazim derivative represented by the following Chemical Formula 1:

Chemical Formula 1



wherein R₁ is selected from the group consisting of a hydrogen atom, a hydroxy group, an amino group, a carboxyl group or salts thereof, a sulfonic acid group or salts thereof or a phosphoric acid group or salts thereof, and R₂, R₃, R₄, R₅, R₆ and R₇ each independently is selected from the group consisting of a hydrogen atom, a halogen atom, a hydroxy group, a nitro group, a cyano group, an amino group, an amidino group, a hydrazine group, a hydrazone group, a carboxyl group or salts thereof, a phosphoric acid group or salts thereof, a substituted or an unsubstituted alkyl group with 1 to 30 carbon atoms, a substituted or an unsubstituted alkylthio group with 1 to 30 carbon atoms, a substituted or an unsubstituted aryl group with 6 to 30 carbon atoms, a substituted or an unsubstituted arylalkyl group with 6 to 30 carbon atoms, a substituted or an unsubstituted heteroalkyl group with 1 to 30 carbon atoms, a substituted or an unsubstituted heteroaryl group with 6 to 30 carbon atoms, and a substituted or an unsubstituted heteroarylalkyl group with 6 to 30 carbon atoms;

a silane derivative represented by the following Chemical Formula 2:

Chemical Formula 2

wherein R_8 is selected from the group consisting of a hydrogen atom, a hydroxy group, an amino group, a carboxyl group or salts thereof, and a sulfonic acid group or salts thereof, R_9 is selected from the group consisting of a heteroatom of -O-, -N-, -S-, or -P-, a substituted or an unsubstituted alkylene group with 1 to 30 carbon atoms, a substituted or an unsubstituted alkenylene or substituted or unsubstituted alkynylene groups with 2 to 30 carbon atoms, a substituted or an unsubstituted heteroalkylene group with 1 to 30 carbon atoms, a substituted or an unsubstituted arylene group with 6 to 30 carbon atoms, a substituted or an unsubstituted arylalkylene group with 6 to 30 carbon atoms, a substituted or an unsubstituted heteroarylene group with 6 to 30 carbon atoms, a substituted or an unsubstituted heteroarylalkylene group with 6 to 30 carbon atoms, and R_{11} , R_{12} , and R_{13} each independently is selected from the group consisting of a hydrogen atom, a substituted or an unsubstituted alkyl group with 1 to 30 carbon atoms, a substituted or an unsubstituted alkenyl or a substituted or an unsubstituted alkynyl group with 2 to 30 carbon atoms, a substituted or an unsubstituted heteroalkyl group with 1 to 30 carbon atoms, a substituted or an unsubstituted aryl group with 6 to 30 carbon atoms, a substituted or an unsubstituted arylalkyl group with 6 to 30 carbon atoms, a substituted or an unsubstituted heteroaryl group with 6 to 30 carbon atoms, and a substituted or an unsubstituted heteroarylalkyl group with 6 to 30 carbon atoms; and
a combination thereof.

7. (Original) The ink composition of claim 6, wherein the amount of the antibacterial colorant is 1 to 20 parts by weight per 100 parts by weight of the composition.

8. (Original) The ink composition of claim 6, wherein the carrier medium is one of: water, at least one organic solvent, and a mixture thereof

9. (Original) The composition according to claim 6, wherein when the carrier medium is a mixture of water with at least one organic solvent, the organic solvent is added to

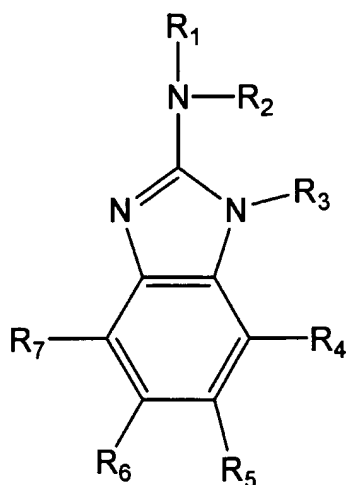
the composition in an amount of 5 to 50 parts by weight based on 100 parts by weight of the composition.

10. (Currently amended) The ink composition of claim 8, wherein the at least one organic solvent is selected from the group consisting of : alcohols, ketones, esters, polyhydric alcohols, ~~low-grade~~lower alkylethers, nitrogenous chemical compounds, and sulfurous chemical compounds.

11. (Original) The composition according to claim 6, further comprising at least one selected from the group consisting of a dispersing agent, a viscosity control agent, a surfactant, a storage stabilizer, a humectant, and a metallic oxide.

12. (Original) An ink composition comprising:
a carrier medium; and
an antibacterial colorant, comprising a colorant molecule having at least one functional group and at least one antibacterial moiety bound thereto by one of: an ester bond and an amide bond, wherein the antibacterial agent is a carbendazim derivative represented by the following Chemical Formula 1:

Chemical Formula 1

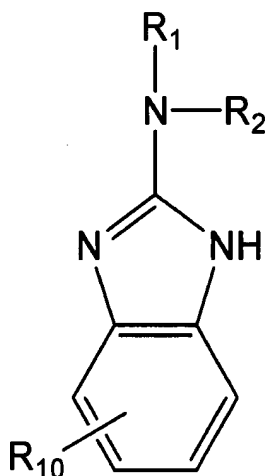


wherein R₁ is selected from the group consisting of a hydrogen atom, a hydroxy group, an amino group, a carboxyl group or salts thereof, a sulfonic acid group or salts thereof or a phosphoric acid group or salts thereof, and R₂, R₃, R₄, R₅, R₆ and R₇ each independently is selected from the group consisting of a hydrogen atom, a halogen atom, a hydroxy group, a nitro group, a cyano group, an amino group, an amidino group, a hydrazine group, a hydrazone

group, a carboxyl group or salts thereof, a phosphoric acid group or salts thereof, a substituted or an unsubstituted alkyl group with 1 to 30 carbon atoms, a substituted or an unsubstituted alkylthio group with 1 to 30 carbon atoms, a substituted or an unsubstituted aryl group with 6 to 30 carbon atoms, a substituted or an unsubstituted arylalkyl group with 6 to 30 carbon atoms, a substituted or an unsubstituted heteroalkyl group with 1 to 30 carbon atoms, a substituted or an unsubstituted heteroaryl group with 6 to 30 carbon atoms, and a substituted or an unsubstituted heteroarylalkyl group with 6 to 30 carbon atoms.

13. (Original) An ink composition comprising:
a carrier medium; and
an antibacterial colorant, comprising a colorant molecule having at least one functional group and at least one antibacterial moiety bound thereto by one of: an ester bond and an amide bond, wherein the antibacterial agent is a carbendazim derivative of Chemical Formula 1 represented by the following Chemical Formula 3:

Chemical Formula 3



wherein R₁ is selected from the group consisting of a hydrogen atom, a hydroxy group and a carboxyl group, and R₂ and R₁₀ each independently is selected from the group consisting of a hydrogen atom, a halogen atom, a hydroxy group, a nitro group, a cyano group, an amino group, an amidino group, a hydrazine group, a hydrazone group, a carboxyl group or salts thereof, a sulfonic acid group or salts thereof, a phosphoric acid group or salts thereof, a substituted or an unsubstituted alkyl group with 1 to 30 carbon atoms, a substituted or an unsubstituted alkenyl or a substituted or an unsubstituted alkynyl group with 2 to 30 carbon atoms, a substituted or an

unsubstituted heteroalkyl group with 1 to 30 carbon atoms, a substituted or an unsubstituted aryl group with 6 to 30 carbon atoms, a substituted or an unsubstituted arylalkyl group with 6 to 30 carbon atoms, a substituted or an unsubstituted heteroaryl group with 6 to 30 carbon atoms, and a substituted or an unsubstituted heteroarylalkyl group with 6 to 30 carbon atoms.

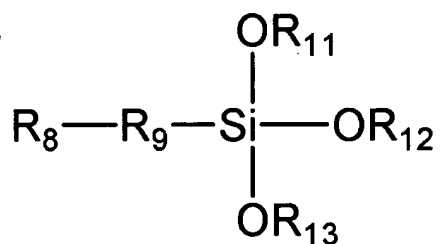
14. (Original) An ink composition comprising:

a carrier medium; and

an antibacterial colorant, comprising a colorant molecule having at least one functional group and at least one antibacterial moiety bound thereto by one of: an ester bond and an amide bond, wherein the antibacterial agent is a silane derivative represented by the following

Chemical Formula 2:

Chemical Formula 2



wherein R_8 is selected from the group consisting of a hydrogen atom, a hydroxy group, an amino group, a carboxyl group or salts thereof, and a sulfonic acid group or salts thereof, R_9 is selected from the group consisting of a heteroatom of -O-, -N-, -S-, or -P-, a substituted or an unsubstituted alkylene group with 1 to 30 carbon atoms, a substituted or an unsubstituted alkenylene or substituted or unsubstituted alkynylene groups with 2 to 30 carbon atoms, a substituted or an unsubstituted heteroalkylene group with 1 to 30 carbon atoms, a substituted or an unsubstituted arylene group with 6 to 30 carbon atoms, a substituted or an unsubstituted arylalkylene group with 6 to 30 carbon atoms, a substituted or an unsubstituted heteroarylene group with 6 to 30 carbon atoms, a substituted or an unsubstituted heteroarylalkylene group with 6 to 30 carbon atoms, and R_{11} , R_{12} , and R_{13} each independently is selected from the group consisting of a hydrogen atom, a substituted or an unsubstituted alkyl group with 1 to 30 carbon atoms, a substituted or an unsubstituted alkenyl or a substituted or an unsubstituted alkynyl group with 2 to 30 carbon atoms, a substituted or an unsubstituted heteroalkyl group with 1 to 30 carbon atoms, a substituted or an unsubstituted aryl group with 6 to 30 carbon atoms, a substituted or an unsubstituted arylalkyl group with 6 to 30 carbon atoms, a substituted or an

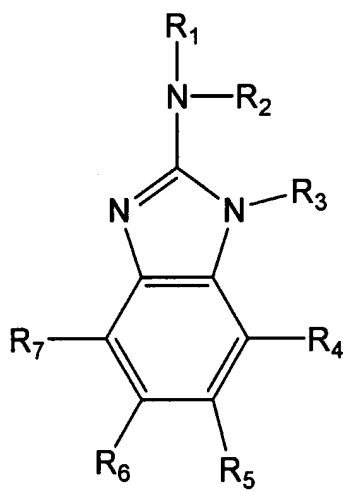
unsubstituted heteroaryl group with 6 to 30 carbon atoms, and a substituted or an unsubstituted heteroarylalkyl group with 6 to 30 carbon atoms.

15. (Currently amended) An ink composition comprising:
a carrier medium; and
an antibacterial colorant, comprising a colorant molecule having at least one functional group and at least one antibacterial moiety bound thereto by one of: an ester bond and an amide bond, wherein the colorant molecule is one of: a dye and a pigment,

wherein the antibacterial agent is:

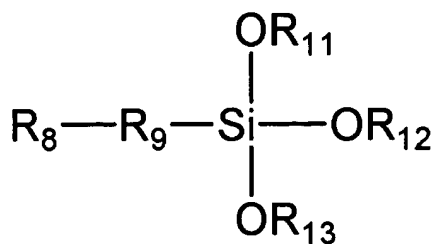
a carbendazim derivative represented by the following Chemical Formula 1:

Chemical Formula 1



wherein R₁ is selected from the group consisting of a hydrogen atom, a hydroxy group, an amino group, a carboxyl group or salts thereof, a sulfonic acid group or salts thereof or a phosphoric acid group or salts thereof, and R₂, R₃, R₄, R₅, R₆ and R₇ each independently is selected from the group consisting of a hydrogen atom, a halogen atom, a hydroxy group, a nitro group, a cyano group, an amino group, an amidino group, a hydrazine group, a hydrazone group, a carboxyl group or salts thereof, a phosphoric acid group or salts thereof, a substituted or an unsubstituted alkyl group with 1 to 30 carbon atoms, a substituted or an unsubstituted alkylthio group with 1 to 30 carbon atoms, a substituted or an unsubstituted aryl group with 6 to 30 carbon atoms, a substituted or an unsubstituted arylalkyl group with 6 to 30 carbon atoms, a substituted or an unsubstituted heteroalkyl group with 1 to 30 carbon atoms, a substituted or an unsubstituted heteroaryl group with 6 to 30 carbon atoms, and a substituted or an unsubstituted heteroarylalkyl group with 6 to 30 carbon atoms;

a silane derivative represented by the following Chemical Formula 2:

Chemical Formula 2

wherein R_8 is selected from the group consisting of a hydrogen atom, a hydroxy group, an amino group, a carboxyl group or salts thereof, and a sulfonic acid group or salts thereof, R_9 is selected from the group consisting of a heteroatom of -O-, -N-, -S-, or -P-, a substituted or an unsubstituted alkylene group with 1 to 30 carbon atoms, a substituted or an unsubstituted alkenylene or substituted or unsubstituted alkynylene groups with 2 to 30 carbon atoms, a substituted or an unsubstituted heteroalkylene group with 1 to 30 carbon atoms, a substituted or an unsubstituted arylene group with 6 to 30 carbon atoms, a substituted or an unsubstituted arylalkylene group with 6 to 30 carbon atoms, a substituted or an unsubstituted heteroarylene group with 6 to 30 carbon atoms, a substituted or an unsubstituted heteroarylalkylene group with 6 to 30 carbon atoms, and R_{11} , R_{12} , and R_{13} each independently is selected from the group consisting of a hydrogen atom, a substituted or an unsubstituted alkyl group with 1 to 30 carbon atoms, a substituted or an unsubstituted alkenyl or a substituted or an unsubstituted alkynyl group with 2 to 30 carbon atoms, a substituted or an unsubstituted heteroalkyl group with 1 to 30 carbon atoms, a substituted or an unsubstituted aryl group with 6 to 30 carbon atoms, a substituted or an unsubstituted arylalkyl group with 6 to 30 carbon atoms, a substituted or an unsubstituted heteroaryl group with 6 to 30 carbon atoms, and a substituted or an unsubstituted heteroarylalkyl group with 6 to 30 carbon atoms; and
a combination thereof.

16. (Original) The ink composition of claim 10, wherein the alcohol/alcohols is/are selected from the group consisting of: methylalcohol, ethylalcohol, n-propylalcohol, isopropylalcohol, n-butylalcohol, sec-butylalcohol, and t-butylalcohol, and isobutylalcohol.

17. (Original) The ink composition of claim 10, wherein the ketone/ketones is/are selected from the group consisting of: acetone, methylethylketone and diacetonealcohol.

18. (Original) The ink composition of claim 10, wherein the ester/esters is/are selected from the group consisting of: ethyl acetate and ethyl lactate.

19. (Currently amended) The ink composition of claim 10, wherein the polyhydric alcohol/polyhydric alcohols is/are selected from the group consisting of: ethyleneglycol, diethyleneglycol, triethyleneglycol, propyleneglycol, butyleneglycol, 1,4-butanediol, 1,2,4-butanetriol, 1,5-pentandiol, ~~1,2,6-hexanetriol~~, 2,6-hexanetriol, hexyleneglycol, glycerol, glycerol ethoxylate, and trimethylolpropane ethoxylate.

20. (Currently amended) The ink composition of claim 10, wherein the ~~low-grade~~lower alkylether/alkylethers is/are selected from the group consisting of: ethyleneglycol monomethylether, ethyleneglycol monoethylether, diethyleneglycol methylether, diethyleneglycol ethylether, triethyleneglycol monomethylether, and triethyleneglycol monoethyl ether.

21. (Original) The ink composition of claim 10, wherein the nitrogenous chemical compound/compounds is/are selected from the group consisting of: 2-pyrrolidone and N-methyl-2-pyrrolidone.

22. (Currently amended) The ink composition of claim 10, wherein the sulfurous chemical compound/compounds is/are selected from the group consisting of: dimethyl sulfoxide, tetramethylene sulfone and ~~triethyl~~thioglycol.

23. (Currently amended) The ink composition of claim 9, wherein the at least one organic solvent is selected from the group consisting ~~of~~ of: alcohols, ketones, esters, polyhydric alcohols, ~~low-grade~~lower alkylethers, nitrogenous chemical compounds, and sulfurous chemical compounds.

24. (Original) The ink composition of claim 23, wherein the alcohol/alcohols is/are selected from the group consisting of: methylalcohol, ethylalcohol, n-propylalcohol, isopropylalcohol, n-butylalcohol, sec-butylalcohol, and t-butylalcohol, and isobutylalcohol.

25. (Original) The ink composition of claim 23, wherein the ketone/ketones is/are selected from the group consisting of: acetone, methylethylketone and diacetonealcohol.

26. (Original) The ink composition of claim 23, wherein the ester/esters is/are selected from the group consisting of: ethyl acetate and ethyl lactate.

27. (Currently amended) The ink composition of claim 23, wherein the polyhydric alcohol/polyhydric alcohols is/are selected from the group consisting of: ethyleneglycol, diethyleneglycol, triethyleneglycol, propyleneglycol, butyleneglycol, 1,4-butanediol, 1,2,4-butanetriol, 1,5-pentanediol, ~~1,2,6-hexanetriol~~ 1,2,6-hexanetriol, hexyleneglycol, glycerol, glycerol ethoxylate, and trimethylolpropane ethoxylate.

28. (Currently amended) The ink composition of claim 23, wherein the ~~low-~~gradelower alkylether/alkylethers is/are selected from the group consisting of: ethyleneglycol monomethylether, ethyleneglycol monoethylether, diethyleneglycol methylether, diethyleneglycol ethylether, triethyleneglycol monomethylether, and triethyleneglycol monoethyl ether.

29. (Original) The ink composition of claim 23, wherein the nitrogenous chemical compound/compounds is/are selected from the group consisting of: 2-pyrrolidone and N-methyl-2-pyrrolidone.

30. (Currently amended) The ink composition of claim 23, wherein the sulfurous chemical compound/compounds is/are selected from the group consisting of: dimethyl sulfoxide, tetramethylene sulfone and ~~tioglycol~~ thioglycol.